FISH & WILDLIFE SERVICE
PACIFIC OCEANIC FISHERY
INVESTIGATIONS

PROCEEDINGS OF THE UNITED STATES NATIONAL MUSEUM

issued *by the*

SMITHSONIAN INSTITUTION
U. S. NATIONAL MUSEUM

Vol. 87 Washington : 1939 No. 3074

A REVISION OF THE SOAPFISHES OF THE GENUS RYPTICUS

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For many years an attempt has been made to distinguish the species of soapfishes by such characters as number of spines on preoperculum, on operculum, and in the dorsal fin and the amount of separation of spinous and soft dorsal fins. Doubtless these characters were considered sufficient, because only a few specimens were available to previous authors. With larger series at hand, however, we find that none of these characters is of much value in the separation of the species.

Perhaps some of the misconceptions prevalent in regard to the soapfishes are caused by the fleshiness of the fins. This makes it impossible to count the fin rays accurately without careful dissections and has led several authors to state that the spinous and soft dorsals are separated. Dissection of the dorsal fin in our specimens shows definitely that the fin supports are of about equal spacing from first dorsal spine to the first few soft rays, after which the rays are closer together posteriorly.

The state of preservation of the fleshy nature of the vertical fins, no doubt, causes the dorsal spines, in some specimens, to appear more or less separated from the soft rays. The scales, too, are difficult to count because they are embedded and covered with mucus. Measurements were made on the various organs of the body, but none of these was found to be significant. The general body form appears to be very similar for all the species.

We wish to thank the following men and institutions for the privilege of examining specimens: Dr. S. F. Hildebrand and Isaac Ginsburg,

of the U. S. Bureau of Fisheries; A. C. Weed, of the Field Museum of Natural History; and J. R. Norman, of the British Museum.

Genus RYPTICUS Cuvier

Rypticus Cuvier, *in* Cuvier and Valenciennes, Histoire naturelle des poissons, vol. 3, p. 60, 1829 (*Anthias saponaceus* Bloch and Schneider).

Rypticus Cuvier, Le règne animal, p. 144, 1829 (*Anthias saponaceus* Bloch and Schneider).

Smecticus Valenciennes, Voyage *Venus* Ichthyologie, p. 305, 1855 (*Rypticus bicolor* Valenciennes).

Promicropterus Gill, Proc. Acad. Nat. Sci. Philadelphia, 1861, p. 53 (*Rypticus maculatus* Holbrook).

Eleutheractis Cope, Trans. Amer. Philos. Soc., new ser., vol. 14, p. 467, fig. 3, 1871 (*Eleutheractis coriaceus* Cope).

To the genus *Rypticus* we refer all those species of serranids [1] that combine the following characters: Dorsal spines 2 or 3; preopercular spines usually 2 or 3, rarely 1 or 4; opercular spines 2 or 3; anal rounded, without spines; caudal, dorsal, and pectoral fins rounded; pelvics 1, 5, inserted a little in advance of the insertion of the pectorals; dorsal fin low in front gradually rising posteriorly, the spiny and soft portions not separated as often indicated in descriptions; body oblong, compressed, covered with small elongate smooth scales somewhat embedded, these scales occurring at least halfway out on all the fins; vertical fins fleshy, the tissue between the rays spongy near their bases; lateral line present, complete; head scaly; mouth large, oblique, the lower jaw longer almost entering profile; maxillary with supplemental bone; interorbital narrow; teeth villiform in bands on jaws, vomer, and palatines; gill rakers short, broad, their edges spiny; branchiostegals 7. Other characters somewhat constant for the genus are: Distance from tip of snout to insertion of pelvics 0.8 to 1.1 times in distance from rear edge of eye to origin of dorsal; depth 2.9 to 3.9 times in standard length; head 2.6 to 3.3; diameter of eye 3.7 to 6.0 in head.

The key and table 1 give the characters that we have found most useful in distinguishing the species of *Rypticus*.

KEY TO SPECIES AND SUBSPECIES OF RYPTICUS

1*a*. Background darker with light spots or color uniform reddish to brown, number and arrangement of light spots or blotches (sometimes marbled), when present, more or less variable, usually numerous and distinct in young but often fading in adults and sometimes absent altogether in specimens 5 inches or longer; young specimens usually have a light narrow band extending backward from eye across side of head and another from tip of snout in middorsal line to origin of dorsal fin, both of which fade on adults; rows of scales crossing lateral line 97 to 130.

[1] Jordan, D. S., Classification of fishes, Stanford Univ. Publ., biol. ser., vol. 3, No. 2, p. 191–192, 1923, transfers all those serranids with a supplemental maxillary bone into the family Epinephelidae.

2*a*. Pacific form. Number of fin rays in dorsal, anal, and one pectoral minus dorsal spines averages more than in Atlantic form, usually from 56 to 61 (see table for distribution of counts). *Range:* Lower California, Cape San Lucas, Gulf of California (Angeles Bay) to Panama and Galapagos Islands ..... **saponaceus bicolor** Valenciennes

2*b*. Atlantic form. Number of soft fin rays in dorsal, anal, and one pectoral minus dorsal spines averages fewer, usually 53 to 59 (see table for distribution of counts). *Range:* Newport, R. I., Bermuda, West Indies, Gulf of Mexico, Central America to Brazil and off west coast of Africa ..... **saponaceus saponaceus** (Bloch and Schneider)

1*b*. Background of a lighter color, with small brown or blackish spots on head and body, spots sometimes fading in adults.

3*a*. Scale rows crossing lateral line 75 to 94 (scale rows were counted from point on head above preopercular bone where lateral line begins to base of caudal fin rays); in young the body is speckled with small brown spots very numerous and not arranged in a few rows. *Range:* Key West, Fla., West Indies, Central America to Brazil, and west coast of Africa **arenatus** Cuvier

3*b*. Scale rows crossing lateral line 95 to 114, brown spots larger and fewer in number; some of which are about the size of the pupil and arranged in 4 to 6 irregular horizontal rows, middle row extending backward from eye is most regular and contains the largest spots numbering 14 or 15. *Range:* West Indies and in Atlantic off Panama ... **subbifrenatus** Gill

RYPTICUS SAPONACEUS BICOLOR Valenciennes

Rypticus bicolor VALENCIENNES, Voyage *Venus* Poissons, pl. 2, fig. 2, 1846 (Galapagos).—JORDAN and EIGENMANN, Bull. U. S. Fish Comm., vol. 8, p. 339, 1890.—JORDAN and EVERMANN, Rep. U. S. Comm. Fish and Fisher. for 1895, app. 5, p. 379, 1896; U. S. Nat. Mus. Bull. 47, pt. 1, p. 1231, 1896.—SNODGRASS and HELLER, Proc. Washington Acad. Sci., vol. 6, pp. 373–426, 1905.—JORDAN, EVERMANN, and CLARK, Rep. U. S. Comm. Fisher. for 1928, pt. 2, p. 316, 1930.

Rypticus saponaceus bicolor HILDEBRAND, Zoologica, vol. 24, pt. 1, p. 39, 1939.

Rhypticus bicolor GÜNTHER, Catalogue of fishes in the British Museum, vol. 1, p. 173, 1859.

Smecticus bicolor VALENCIENNES, Voyage *Venus* Ichthyologie, p. 307 (pl. 2, fig. 2), 1855.—GILL, Proc. Acad. Nat. Sci. Philadelphia, 1861, p. 53; 1863, p. 164.—BLEEKER, Arch. Neerland. Sci. Exartes Natur., vol. 11, p. 258, 1876.

Rhypticus nigripinnis GILL, Proc. Acad. Nat. Sci. Philadelphia, 1861, p. 53 (Panama).—JORDAN and GILBERT, Proc. U. S. Nat. Mus., vol. 5, pp. 359, 375, 381, 1882.—JORDAN, Rep. U. S. Comm. Fish and Fisher. for 1884, p. [86], 1885; Proc. U. S. Nat. Mus., vol. 8, p. 378, 1885.—BOULENGER, Catalogue of fishes in the British Museum, vol. 1, p. 349, 1895.

Rypticus nigripinnis JORDAN and EIGENMANN, Bull. U. S. Fish Comm., vol. 8, p. 339, 1890 (based on U.S.N.M. No. 29277).—JORDAN and EVERMANN, Rep. U. S. Comm. Fish and Fisher. for 1895, app. 5, p. 380, 1896; U. S. Nat. Mus. Bull. 47, pt. 1, p. 1234, 1896.—GILBERT and STARKS, Contr. Hopkins Seaside Lab. Mem., No. 32, p. 100, 1904 (also Mem. California Acad. Sci., vol. 4, p. 100).—FOWLER, Proc. Acad. Nat. Sci. Philadelphia, 1916, p. 140.—MEEK and HILDEBRAND, Marine fishes of Panama, pt. 2, p. 482, 1925.—WALFORD, Marine game fishes Pacific coast Alaska to Equator, p. 125, pl. 16, fig. C, 1937.

Promicropterus nigripinnis=*R. nigripinnis* GILL, Proc. Acad. Nat. Sci. Philadelphia, 1863, p. 164.

Promicropterus nigripinnis JORDAN, EVERMANN, and CLARK, Rep. U. S. Comm. Fisher. for 1928, pt. 2, p. 317, 1930.

Rhypticus maculatus GILL (non Holbrook), Proc. Acad. Nat. Sci. Philadelphia, 1862, p. 251 (Cape San Lucas); 1863, p. 164.

Rhypticus xanti GILL, Proc. Acad. Nat. Sci. Philadelphia, 1862, p. 250 (Cape San Lucas, Lower California); 1863, p. 164.—JORDAN and GILBERT, Proc. U. S. Nat. Mus., vol. 5, pp. 359, 371, 1882.—JORDAN, Proc. U. S. Nat. Mus., vol. 8, p. 377, 1885; Rep. U. S. Comm. Fish and Fisher. for 1884, p. [85], 1885.

Rypticus xanti JORDAN and EIGENMANN, Bull. U. S. Fish Comm., vol. 8, p. 339, 1890.—JORDAN, STARKS, and WILLIAMS, Contr. Biol. Hopkins Lab. Biol. Mem., vol. 1, p. 452, 1895.—JORDAN and EVERMANN, Rep. U. S. Comm. Fish and Fisher. for 1895, app. 5, p. 379, 1896; U. S. Nat. Mus. Bull. 47, pt. 1, p. 1231, 1896 (description based on U.S.N.M. No. 7740).—MEEK and HILDEBRAND, Marine fishes of Panama, pt. 2, p. 481, pl. 48, 1925.—JORDAN, EVERMANN, and CLARK, Rep. U. S. Comm. Fisher. for 1928, pt. 2, p. 316, 1930.—BREDER, Bull. Bingham Oceanogr. Coll., vol. 2, art. 3, p. 24, 1936.

Promicropterus decoratus GILL, Proc. Acad. Nat. Sci. Philadelphia, 1863, p. 164 (west coast of Central America).

Rhypticus decoratus GÜNTHER, Trans. Zool. Soc. London, vol. 6, pp. 383, 385, 412, 1869.—JORDAN and GILBERT, U. S. Nat. Mus. Bull. 16, p. 543, 1882.

The color of *R. saponaceus bicolor* and *R. s. saponacues* is very variable. The white spots on some specimens are very few in number, not over a dozen on each side, while in others twice that number, and grading upward to those with very numerous light spots. In some the spots are so numerous that they meet to give the soapfish the appearance of a marbled pattern. The specimens that are plain in color appear not to be different otherwise from the spotted forms.

Since large adults of *R. subbifrenatus* have not been seen by us, there is a possibility that specimens of *Rypticus* that have no light spots and that are plain in color may be confused with *R. subbifrenatus*. We do not have ample material of the latter to determine the variation in the number of fin rays, which might be of some aid in its separation from *R. s. saponaceus* of the Atlantic.

The presence of *Rypticus s. saponaceus* on the western coast of Africa is verified by counts made on two specimens kindly lent to us by J. R. Norman, of the British Museum. Fin counts of these specimens from Accra, Gold Coast, and Cape Verde Islands, respectively, are as follows: Dorsal rays III, 24; III, 25. Anal rays 16; 16. Pectoral rays 16; 16. Preopercular spines 4, 3; 3, 3. Opercular spines 4, 4; 3, 3. Scale rows along side of body about 105; 113.

The following collections in the U. S. National Museum have been examined:

No. 3689 (type *R. maculatus*). "Cape San Lucas." J. Xantus.
No. 3700 (type *R. nigripinnis*). "Panama." Rev. I. Rowell.
No. 7740. Colima, Mexico. J. Xantus.

No. 29277. Panama. C. H. Gilbert.
No. 30740 (type *R. zanti*). Cape St. Lucas. J. Xantus.
No. 30961 (type *P. decoratus*). Panama. Capt. Dow.
No. 41259. Panama, March 5, 1888. *Albatross.*
No. 41329. St. Lucia, 1888. *Albatross.*
No. 41378. Socorro Island. *Albatross.*
No. 50361. Panama. C. H. Gilbert.
No. 76573. Panama City, Panama, October 3, 1914. James Zetek.
No. 76816. Panama City, Panama, July 27, 1915. James Zetek.
No. 76817. Panama City, Panama, December 1914. James Zetek.
No. 80229. Tide pools, Panama, Panama, March 21, 1912. Meek and Hildebrand.
No. 80230. Tide pools, Panama, Panama, March 24, 1912. Meek and Hildebrand.
No. 80231. Tide pools, Panama, Panama, March 22, 1912. Meek and Hildebrand.
No. 80233. Tide pools, Panama, Panama, March 23, 1912. Meek and Hildebrand.
No. 80235. Tide pools, Panama, Panama, March 24, 1912. Meek and Hildebrand.
No. 80236. Panama Bay, Panama, March 25, 1912. Meek and Hildebrand.
No. 80298. Panama Market, Panama. April 6, 1911. Meek and Hildebrand.
No. 80299. Panama Bay, Balboa, C. Z. March 25, 1912. Meek and Hildebrand.
Nos. 82002, 82003. Chame Point, Panama, Autumn 1912. Robert Tweedlie.
No. 94010. Albemarle Island, Galapagos, January 25, 1934. W. L. Schmitt, Hancock Expedition.
No. 101858. Pinas Bay, Panama, January 29, 1935. W. L. Schmitt, Hancock Expedition.
No. 104965. Costa Rica, Golfa Dulce, February 1933. M. Valerio.
No. 106622. Miraflores Locks, C. Z. April 28, 29, 1937. A. O. Foster.
No. 106615. Miraflores Locks, C. Z. April 28, 29, 1937. S. F. Hildebrand.
No. 106621. Miraflores Locks, C. Z. March 26, 1937. S. F. Hildebrand.
No. 106617. Panama City, San Francisco Reef tide pools, February 13, 1937. S. F. Hildebrand.
No. 106620. Miraflores Locks, March 26–29, 1937. S. F. Hildebrand.
No. 106623. Venado Beach, Panama, February 26, 1937. S. F. Hildebrand.
No. 106624. Farfan Beach, C. Z. February 24, 1937. S. F. Hildebrand.
No. 106626. Balboa, C. Z. January 29, 1937. S. F. Hildebrand.
No. 106618. Panama City, San Francisco Reef tide pools. February 18, 1937. S. F. Hildebrand.
No. 106616. Panama, San Francisco Beach, February 10, 1937. S. F. Hildebrand.
U.S.B.F. 393. Socorro Island, March 8, 1889. *Albatross.*

RYPTICUS SAPONACEUS SAPONACEUS (Bloch and Schneider)

Anthias saponaceus Bloch and Schneider, Systema ichthyologiae . . . , p. 310, 1801 (after Jabonsilla Parra, Descripcíon de diferentes piezas de historia natural . . . , No. 51, lam. 24, fig. 2, 1787) (Habana).

Rypticus saponaceus Cuvier and Valenciennes, Histoire naturelle des poissons, vol. 3, p. 63, 1829.—Richardson, Fauna Boreali-Americana, p. 32, 1836.—Storer, A synopsis of the fishes of North America, p. 37 (289), 1846.—Poey, Repertorio fisiconatural de la isla de Cuba, vol. 1, p. 270, 1866.—Bleeker, Arch. Neerland. Sci. Exact. et Natur., vol. 11, p. 258, 1876.—Jordan and Eigenmann, Bull. U. S. Fish Comm., vol. 8, p. 340, 1890.—Jordan and Evermann, Rep. U. S. Comm. Fish and Fisher. for 1895, app. 5, p. 379, 1896; U. S. Nat. Mus. Bull. 47, pt. 1, p. 1232, 1896.—Evermann and Marsh,

Bull. U. S. Fish Comm., vol. 20, pt. 1, p. 163, 1902.—JORDAN and THOMPSON, Bull. U. S. Bur. Fisher., vol. 24, p. 241, 1905.—RIBEIRO, Arch. Mus. Nac. Rio de Janeiro, vol. 17, Serranidae, p. 5, 1915.—NICHOLS, Bull. Amer. Mus. Nat. Hist., vol. 44, art. 3, p. 23, 1921.—MEEK and HILDEBRAND, Marine fishes of Panama, pt. 2, p. 480, pl. 47, 1925.—BREDER, Field book of marine fishes of the Atlantic coast, p. 166, 1929.—NICHOLS, Sci. Surv. Porto Rico and Virgin Islands, New York Acad. Sci., vol. 10, pt. 2, p. 257, 1929.—JORDAN, EVERMANN, and CLARK, Rep. U. S. Comm. Fisher. for 1928, pt. 2, p. 316, 1930.—FOWLER, Proc. Acad. Nat. Sci. Philadelphia, vol. 82, p. 273, 1930.—BEEBE and TEE-VAN, Field book of shore fishes of Bermuda, p. 133, fig., 1933.—FOWLER, Bull. Amer. Mus. Nat. Hist., vol. 70, pt. 2, p. 778, 1936.—HILDEBRAND, Zoologica, vol. 24, pt. 1, p. 27, 1939.

Rhypticus saponaceus GÜNTHER, Catalogue of fishes in the British Museum, vol. 1, p. 172, 1859.—GILL, Proc. Acad. Nat. Sci. Philadelphia, 1861, p. 52; 1863, p. 163.—GÜNTHER, Proc. Zool. Soc. London, 1868, p. 225.—POEY, Synopsis piscium cubensium, p. 297, 1868.—COPE, Trans. Amer. Philos. Soc., new ser., vol. 14, p. 467, 1871.—MELLISS, St. Helena . . . , p. 103, 1875.—POEY, Enumeratio piscium cubensium, p. 34, 1875.—PETERS, Monatsb. Preuss. Akad. Wiss. Berlin, 1876, p. 245.—GÜNTHER, Report on the shore fishes (*in* Zoology of the voyage of H. M. S. *Challenger*, vol. 1, pt. 6), pp. 3, 8, 1880.—STAHL, Catalogo Gabinette Zoologico, pt. 1, class. sist., Fauna puertoriquena cuadros sinopticos, p. 162, 1882.—JORDAN, Proc. U. S. Nat. Mus., vol. 7, p. 35, 1884; *ibid.*, p. 546, 1885; Rep. U. S. Comm. Fish and Fisher., for 1884, p. [85], 1885.—ROCHEBRUNE, Faune de la Sénégambie, Poissons, p. 44, 1885.—JORDAN, Proc. U. S. Nat. Mus., vol. 9, p. 581, 1887.—BOULENGER, Catalogue of fishes in the British Museum, vol. 1, p. 348, 1895.—OSORIO, Jorn. Sci. Math. Phys. Nat. Acad. Sci. Lisboa, ser. 2, vol. 3, No. 12, p. 244, 1895; vol. 5, No. 19, pp. 188, 195, 1898; Mem. Mus. Bocage Lisboa, fasc. 1, p. 60, 1909.—CLARK, Proc. Roy. Phys. Soc. Edinburgh, vol. 19, No. 3, p. 52, 1913.—METZELAAR, Report on the fishes collected by J. Boeke in the Dutch West Indies, 1904–1905, Rep. Toestand Visscherij Curaçao, pp. xvii, 56, 234, 1919.—ROULE, Poissons *Princesse-Alice* (1891–1903) et *Hirondelle II* (1914), Res. Camp. Sci. Albert I, Prince de Monaco, fasc. 52, p. 49, 1919.—BARNARD, Ann. South African Mus., vol. 21, p. 491, 1927 (Cape seas).

Bodianus bis-trispinus MITCHILL, Amer. Monthly Mag. Crit. Rev., vol. 2, No. 4, p. 247, 1818 (Str. Bahama).

Rhypticus bistrispinus JORDAN, Proc. U. S. Nat. Mus., vol. 7, p. 149, 1884; Rep. U. S. Comm. Fish and Fisher. for 1884, p. [86], 1885; Proc. U. S. Nat. Mus., vol. 9, p. 581, 1887.—METZELAAR, Rep. Toestand Visscherij Curaçao, pp. xvii, 57, 1919.

Rypticus bistrispinus JORDAN and EIGENMANN, Bull. U. S. Fish Comm., vol. 8, p. 338, 1890.—JORDAN and EVERMANN, Rep. U. S. Comm. Fish and Fisher. for 1895, app. 5, p. 380, 1896; U. S. Nat. Mus. Bull. 47, pt. 1, p. 1233, pl. 194, fig. 509, 1896.—EVERMANN and MARSH, Bull. U. S. Fish Comm., vol. 20, pt. 1, p. 163, fig. 46, 1902.—T. H. BEAN, Field Columbian Mus. Publ., zool. ser., vol. 7, No. 2, p. 55, 1906.—FOWLER, Proc. Boston Soc. Nat. Hist., vol. 35, No. 4, p. 111, 1917; Proc. Biol. Soc. Washington, vol. 36, p. 22, 1923.—EVERMANN and SEALE, Univ. Iowa Studies Nat. Hist., vol. 10, No. 4, p. 31, 1924.—NICHOLS and BREDER, Zoologica, vol. 9, pt. 1, p. 81, fig., 1926.—BREDER, Bull. Bingham Oceanogr. Coll., vol. 1, art. 1, p. 45, 1927.—BORODIN, Bull. Vanderbilt Oceanogr. Mus., vol. 1, art. 1, p. 19, 1928.—NICHOLS, Sci. Surv. Porto Rico and Virgin Islands, New York Acad. Sci., vol. 10, pt. 2, p. 258, fig. 126, 1929.—BEEBE and TEE-VAN, Field book of shore fishes of Bermuda, p. 132, fig., 1933.

Rhypticus bistrispineus BOULENGER, Catalogue of fishes in the British Museum, vol. 1, p. 350, 1895.

Rhypticus bistrispinosus ROSÉN, Lunds Univ. Arsskr. Följd, Afd. 2, Bd. 7, No. 5, p. 55, 1911.

Rypticus bistrispenus BREDER, Field book of marine fishes of the Atlantic coast, p. 166, fig., 1929.

Promicropterus bistrispinus JORDAN, EVERMANN, and CLARK, Rep. U. S. Comm. Fisher. for 1928, pt. 2, p. 316, 1930.

Rypticus microps CASTELNAU, Animaux nouveaux ou rares recueillis . . . l'Amerique du Sud, p. 6, 1855.

Rypticus maculatus HOLBROOK, Ichthyology of South Carolina, p. 39, pl. 6, fig. 2, 1855 (South Carolina); ed. 2, p. 42, pl. 6, fig. 2, 1860 (Cape Romain).

Rhypticus maculatus GÜNTHER, Catalogue of the fishes in the British Museum, vol. 1, p. 173, 1859.—JORDAN and GILBERT, U. S. Nat. Mus. Bull. 16, p. 543, 1882.—JORDAN, Proc. U. S. Nat. Mus., vol. 7, p. 35, 1884.

Promicropterus maculatus GILL, Proc. Acad. Nat. Sci. Philadelphia, 1861, p. 53; 1863, p. 164.

Promicropterus decoratus (non Gill) COPE, Proc. Acad. Nat. Sci. Philadelphia, 1870, p. 119.

Eleutheractis coriaceus COPE, Trans. Amer. Philos. Soc., new. ser., vol. 14, p. 467, fig. 3, 1871.

Rypticus coriaceus JORDAN and EIGENMANN, Bull. U. S. Fish Comm., vol. 8, p. 341, 1890.—JORDAN and EVERMANN, Rep. U. S. Comm. Fish and Fisher. for 1895, app. 5, p. 379, 1896; U. S. Nat. Mus. Bull. 47, pt. 1, p. 1233, 1896.—EVERMANN and MARSH, Bull. U. S. Fish Comm., vol. 20, pt. 1, p. 163, 1902.—STARKS, The fishes of the Stanford expedition to Brazil, p. 45, 1913.—BEEBE and TEE-VAN, Zoologica, vol. 10, No. 1, p. 133, 1928.—NICHOLS, Sci. Surv. Porto Rico and Virgin Islands, New York Acad. Sci., vol. 10, pt. 2, p. 258, fig. 125, 1929.—JORDAN, EVERMANN, and Clark, Rep. U. S. Comm. Fisher. for 1928, pt. 2, p. 316, 1930.

The following collections in the U. S. National Museum have been examined:

No. 21394. Bermudas, 1877. G. Brown Goode.
No. 21544. Charleston, S. C., July 1878. C. C. Leslie.
No. 25994. Charleston, S. C. C. C. Leslie.
No. 30130. Jamaica, West Indies, 1881. Kingston Public Museum.
No. 43278. Bahia, Brazil, 1887. *Albatross.*
No. 44468. Patuca River, Honduras, January 1892. H. W. Perry.
No. 44716. Central America, 1893. Frank P. Davis.
No. 50188. Hucares, Puerto Rico, February 13, 1899. *Fish Hawk.*
No. 53136. Nassau, Bahamas, July 2, 1903. B. A. Bean.
No. 53367. Off New Smyrna, Fla., December 1, 1905. B. A. Bean.
No. 62695. Palm Beach, Fla., December 7, 1908. B. A. Bean, *Orian.*
No. 80232. Salt Water Division, Corozal, Panama, C. Z., February 15, 1911. Meek and Hildebrand.
No. 80234. Mindi Cut, Canal Zone, Panama, February 3–4, 1911. Meek and Hildebrand.
No. 89654. Petit Baraderes Bay, Haiti, April 9, 1930. Smithsonian-Parish Expedition. W. M. Perrygo.
No. 106514. West coast of Florida, St. Martins, 28°34′45″ N., 83°08′00″ W., January 15, 1902. *Fish Hawk* station 7221.
No. 106515. Gulf of Mexico, 28°47′30″ N., 84°37′ 00″ W., March 15, 1885. *Albatross* station 2407.

No. 106625. Gatun Locks, C. Z., January 4, 1935. S. F. Hildebrand.
U. S. B. F. No. 863. Mayaguez, Puerto Rico, January 19, 1899. *Fish Hawk.*

Specimens from the Field Museum:

No. 5295. Nonsuch Islands, Bermuda. T. H. Bean.
No. 2824. Jamaica. Roberts.

RYPTICUS SUBBIFRENATUS Gill

Rhypticus subbifrenatus GILL, Proc. Acad. Nat. Sci. Philadelphia, 1861, p. 53 (St. Thomas in Caribbean); 1863, p. 164.

Rhypticus nigromaculatus STEINDACHNER, Sitzber. math.-nat. Akad. Wiss. Wien, vol. 56, pt. 1, p. 348 [42], 1867.—JORDAN, Proc. U. S. Nat. Mus., vol. 9, p. 581, 1887.

Rypticus nigromaculatus JORDAN and EIGENMANN, Bull. U. S. Fish Comm., vol. 8, p. 341, 1890.

Rhypticus spec. juv. METZELAAR, Rep. Toestand Visscherij Curaçao, pp. xvii, 58, fig. 22, 1919.

The color of *R. subbifrenatus* consists of 5 or 6 horizontal rows of black or brown spots, one along base of dorsal fin, which sometimes branches off the one that begins over eye and extends along back to below end of soft dorsal fin; another or a branch of the latter begins at anterior end of lateral line, sometimes dividing below spinous dorsal to form two irregular rows; the longest and most regular row begins behind middle of eye and consists of three or four oblong spots on head, extending posteriorly along middle of body to base of caudal fin; the ventralmost row begins on preopercle in front of the pectoral fin base, continuing backward to under side of caudal peduncle; there are a few black spots near basal half of pectoral fin rays.

The following collections have been studied:

U.S.N.M. No. 82432, San Antonio, Cuba, 1914. Henderson and Bartsch.
No. 106516. Reef and beach St. Thomas, Smith Bay, April 25, 1937. W. L. Schmitt, Smithsonian-Hartford Expedition 1937, station 68.
No. 106619. Limon Bay, Fort Sherman (Toro Point), C. Z., February 20, 1937. J. B. Shropshire.

RYPTICUS ARENATUS Cuvier

Rypticus arenatus CUVIER, *in* Cuvier and Valenciennes, Histoire naturelle des poissons, vol. 3, p. 65, pl. 46, 1829 (Brazil); Le règne animal, vol. 2, p. 144, 1829.—JORDAN and EIGENMANN, Bull. U. S. Fish Comm., vol. 8, p. 340, 1890.—JORDAN and EVERMANN, Rep. U. S. Comm. Fish and Fisher. for 1895, app. 5, p. 379, 1896; U. S. Nat. Mus. Bull. 47, pt. 1, p. 1232, 1896.—FOWLER, Proc. Acad. Nat. Sci. Philadelphia, 1916, p. 402.—JORDAN, EVERMANN, and CLARK, Rep. U. S. Comm. Fisher. for 1928, pt. 2. p. 316, 1930.—FOWLER, Bull. Amer. Mus. Nat. Hist., vol. 70, pt. 2, p. 779, fig. 343, 1936.

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Rhypticus pituitosus Goode and Bean, Proc. U. S. Nat. Mus., vol. 2, p. 341, 1880 (Key West, Fla.); vol. 5, p. 238, 1882.—Jordan and Gilbert, U. S. Nat. Mus. Bull. 16, p. 543, 1882.

Rypticus boroni Beebe and Tee-Van, Zoologica, vol. 10, No. 1, p. 132, fig., 1928.

?*Rhypticus coriaceus* Metzelaar, Rep. Toestand Visscherij Curaçao, pp. xvii, 57, fig. 21, 1919.

The following collections have been studied:

U.S.N.M. No. 23555 (type *R. pituitosus*). Key West, Fla. J. W. Velie.
No. 37439. Cuba, 1885. F. Poey.
No. 43559. 25°12′ N., 83°20′30″ W., 1889. *Grampus.*
No. 50208. Culebra, Puerto Rico, February 10, 1899. *Fish Hawk.*
No. 53137. Green Cay, Bahamas, June 30, 1903. B. A. Bean.
U. S. B. F. 905. Culebra, Puerto Rico, February 10, 1899. *Fish Hawk.*
Field Museum 3261. Off Culebra, Puerto Rico. February 6, 1899. B. W. Evermann.

Table 1.—*Counts made on* Rypticus

Species	Dorsal fin rays									Anal fin rays					Pectoral fin rays			
	Spines		Soft rays															
	II	III	21	22	23	24	25	26	27	14	15	16	17	18	14	15	16	17
R. s. saponaceus	9	22	----	----	4	15	6	1	1	7	8	11	1	----	1	7	18	1
R. s. bicolor	29	8	----	1	1	3	16	10	6	----	3	20	13	1	1	2	25	9
R. arenatus	17	----	----	----	----	4	8	4	2	8	8	2	----	----	13	4	----	----
R. subbifrenatus	----	3	1	----	2	----	----	----	----	1	2	----	----	----	2	1	----	----

Species	Preopercular spines				Opercular spines		Total gill rakers					Scales above lateral line									
	1	2	3	4	2	3	7	8	9	10	11	9	10	11	12	13	14	15	16	17	18
R. s. saponaceus	6	35	12	---	10	40	3	9	8	5	1	---	---	---	1	4	10	4	5	1	1
R. s. bicolor	3	59	11	2	-----	72	3	17	7	4	---	---	---	---	---	5	12	5	3	1	---
R. arenatus	---	32	2	---	-----	34	1	10	7	2	---	1	7	6	---	---	---	---	---	---	---
R. subbifrenatus	---	5	1	---	-----	6	1	2	---	---	---	---	---	---	2	1	---	---	---	---	---

Species	Rows of scales crossing lateral line																															
	73 74	75 76	77 78	79 80	81 82	83 84	85 86	87 88	89 90	91 92	93 94	95 96	97 98	99 100	101 102	103 104	105 106	107 108	109 110	111 112	113 114	115 116	117 118	119 120	121 122	123 124	125 126	127 128	129 130
R. s. saponaceus	--	--	--	--	--	--	--	--	--	--	--	--	--	---	---	---	7	2	6	3	1	---	---	---	---	---	2	---	1
R. s. bicolor	--	--	--	--	--	--	--	--	--	--	--	--	2	2	---	6	5	4	4	2	2	---	1	2	---	1	---	---	---
R. arenatus	--	1	2	2	--	5	2	1	2	--	1	--	--	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
R. subbifrenatus	--	--	--	--	--	--	--	--	--	--	--	1	--	---	---	---	---	---	---	1	1	---	---	---	---	---	---	---	---

TABLE 1.—*Counts made on* Rypticus—Continued

Species	Total soft fin rays in dorsal and anal and one pectoral minus the dorsal spines											
	50	51	52	53	54	55	56	57	58	59	60	61
R. s. saponaceus	----	----	----	4	4	4	7	4	3	1	----	----
R. s. bicolor	----	----	----	1?	----	----	3	12	11	6	2	2
R. arenatus	----	----	2	6	2	3	2	2	1	----	----	----
R. subbifrenatus	1	----	2	----	----	----	----	----	----	----	----	----

U. S. GOVERNMENT PRINTING OFFICE: 1939